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Bureaucracies at War: The V-22 Osprey Program

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Abstract

The V-22 Osprey has been the focus of growing conflicts between the Administration, Congress, the military services, and the aerospace industry. Since 1989, attempts by the Secretary of Defense to cancel the program have been blocked by congressional action. The paper examines the program's origins and the development of bureaucratic tactics and alliances used to exert control over the program's future. A final review shows the significance of a changing budgetary climate on the nation's defense acquisition process, and how it affects procurement strategy, political compromise, and enhancement of national security.

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The V-22 Osprey tiltrotor aircraft combines the best attributes of a helicopter (hover/low speed) with those of fixed-wing aircraft (high altitude/high speed), but at a cost that exceeds a comparable size conventional helicopter. Control of the V-22 program has been the objective of a fierce bureaucratic war ever since the Bush Administration was established in 1989. Two principal camps emerged - those who believe the Department of Defense (DOD) should acquire the V-22, and those who don't. Neither side seems willing to compromise so a negotiated settlement is unrealistic; each seeks an unconditional surrender.

The V-22 program is mired in both a formal and informal bureaucratic struggle. Its acquisition history is rife with impediments to decisionmakers. The adversaries hold strong convictions about their role in formulating national security strategy. This conflict raises questions about the ability of government to make acceptable defense acquisition decisions for the nation.

- Can the executive branch drive acquisition strategy for the nation over an opposed legislature?
- Is political compromise realistic and feasible, or must the players become casualties and be replaced?
- Will this conflict over the V-22 enhance national security?

Program advocates -- principally Congress, industry, and the Marine Corps -- view the V-22 as a new generation aircraft - an

American technological breakthrough, years ahead of foreign competition. It satisfies the military requirements of today and the projected ones of tomorrow with better maintainability, reliability, and survivability than conventional helicopters. The tiltrotor concept has vast commercial potential, giving a partial solution to the increased airport congestion expected in the 21st century, while providing access to remote areas where large airports would not be feasible. Offering substantial industrial growth, V-22 production could help reduce the nation's trade deficit.

Opponents of the program -- principally the Administration and OSD -- consider themselves dedicated to acting in the public interest, especially concerning the distribution of public funds. Their valid concern is one that accompanies most new technological developments - does the military really need the V-22? The pursuit of the best available technology may not be preferable to a less expensive alternative - there are higher priority programs that the money should be used for. Additionally, the development of a commercial tiltrotor using defense funds may not be the best use of taxpayers money.

The reasons the players are engaged vary, and their positions are at times ambiguous. For example, the Marine Corps covets the program but is obligated by their position within DOD to oppose it. There are no "good" or "bad" sides; each pursues what is thought to be best for national security. The decision to acquire the V-22 is difficult, particularly since the executive branch wants to cancel

the Osprey program in the face of congressional support.

Decisionmaking at the national level is slow, complex, hard to direct and focus, and must deal with bureaucracies. The executive branch determines the requirements to support national security, and the legislative represents the interests of the American people in meeting those requirements. In this complex environment a systems approach to decisionmaking would be able to account for all interested political, economic, and military disciplines, and produce effective decisions when procedures are followed and accurate data is available. Through a formal process of setting requirements, gathering data and possible options, evaluating proposed solutions, and finally arranging programs and receiving feedback, a rational acquisition decision could be made.

However, informal processes wield a great deal of influence in bureaucracies. Decisionmakers want to believe they are rational, that their system works, but what's critical is the dynamics outside the system. Impediments to rational decisionmaking surface through individuals, special interest groups, and large organizations. The personalities of the nation's leaders, parochialism, hidden agendas, economic self-interests, political leverage, and bureaucratic strategies tend to distort or channel information. When confronted with these overwhelming obstacles, the formal process breaks down, and the nation may end up with a less than optimum decision.

THE BUILDUP

JVX 1981-1985

Paris Air Show, June 1981. A new tiltrotor aircraft, NASA's XV-15, completed its first public demonstration with impressive results, and caught the eye of John Lehman, Jr., the new Secretary of the Navy.[1] Secretary Lehman had been looking for a future replacement for his department's aging medium-lift helicopter fleet. The Navy projected the development cost of a new generation helicopter to be about $1.8B, and $2.4B for an advanced technology option. With an estimated production cost of 15% more per airframe, an advanced technology aircraft would be twice as fast, fly twice as high, and have four times the range.[2] SECNAV believed the extra capability was worth the investment.

Meanwhile, the Office of the Secretary of Defense (OSD), while reviewing the services FY 83 Program Objectives Memorandums (POM's), discovered that an opportunity existed to create a joint program in vertical lift. An initiative from the Under Secretary of Defense (USD) for Research and Engineering proposed a development program be started, and all services responded positively by the end of October 1981.

On 30 December 1981, Deputy Secretary of Defense (SECDEF) Frank Carlucci established the Joint Service Advanced Rotor Wing Development (JVX) Program to develop a multi-mission VTOL capable

aircraft for the 1990's. The Army was designated the executive service for the program. In February 1982, a Joint Service Operational Requirement (JSOR) group met to identify the JVX mission requirements, and a Joint Technical Assessment (JTA) group met to look into different JVX concepts: a high speed conventional helicopter, a compound helo/advancing blade concept (ABC), a tiltrotor, and a lift/cruise fan.[3]

On 8 March 1982, Secretary Lehman decided to pursue the Marine assault replacement aircraft and support Combat Search and Rescue (CSAR) through the JVX program, and to incorporate the technology in the widest range of fleet missions. The SECNAV's substantial effort to modernize and expand the fleet was beginning, and the JVX concept was a natural addition. A SECNAV backed joint Memorandum of Understanding (MOU) was signed by all service secretaries on 4 June and listed the following missions:

* Marine medium assault transport
* Navy/Air Force Combat Search and Rescue (CSAR)
* Army Special Electronic Missions
* Air Force Long-Range Special Operations Force (SOF)
* Worldwide self deployability[4]

On 7 June 1982 Bell Helicopter and Boeing-Vertol announced a teaming agreement to participate in the JVX competition.[5] Bell (from Ft Worth, Texas) had been in the tiltrotor aircraft development program with NASA and the U.S. Army, and was contracted to build the XV-15 in 1973. Boeing-Vertol (from Philadelphia, Pennsylvania) was renown for its expertise in advanced technology

composites, and had worked with early tiltwing designs in the 1950's. A complementary yet formidable team was established.

By the fall of 1982, the Army, with other priorities, wanted to delay the JVX program for a couple of years. When this proved unacceptable to the other services, the Army relinquished their executive service status to the Navy, but still continued to support the program.[5] The JTA group had completed their study and concluded that tiltrotor technology offered the best potential for the JVX, and on 4 December 1982 the JSOR group published the JVX operational requirements. The tiltrotor program was gaining momentum, and was in the right place at the right time - in the middle of the Reagan military buildup.

In response to the Request for Proposals (RFP), Bell-Boeing submitted a proposal to the Navy on 17 February 1983 for the JVX program.[7] Considering Bell's tiltrotor experience and the JTA findings, it wasn't surprising that no other proposals from industry were submitted. The Bell-Boeing team stood alone, and on 25 April 1983, they were awarded the JVX preliminary design contract from the Naval Air Systems Command (NASC).[8]

In May 1983, the Army had to withdraw from the program development phase. Their CH-47 improvement, Apache procurement, and LHX development programs could be in jeopardy if they also supported the JVX.[9] But the Army, while not funding the RDT&E

effort, still planned to fund production in FY 91 and take delivery of 231 tiltrotor aircraft (Marine versions) in FY 93.[10]

As popular as the JVX concept seemed to be, not everyone had jumped on the bandwagon. Dr. David Chu, who had become the Director for Programs Analysis and Evaluation (PA&E) for OSD in 1981, did not share Secretary Lehman's view that the JVX was a worthwhile investment. Dr. Chu raised affordability issues, proposing that a new fleet of conventional helicopters could match the lift of a JVX tiltrotor at a much lower cost, particularly in supporting the Marine Corps mission. It was an indication of the program's impetus that Dr. Chu, responding in January 1984 to inquiries from the Assistant SECDEF (Comptroller), had to list potential future JVX missions, indirectly adding support for the JVX.[11]

Bell-Boeing found the XV-15 was valuable demonstrating tiltrotor capabilities and promoted a "guest pilot" program. The aircraft had the ability to sell itself; those who experienced tiltrotor flight became supporters. Senator Barry Goldwater (R-AZ) was the first "guest" to fly the XV-15 on 31 October 1981, and commented, "The tiltrotor is the biggest advance in aviation in a quarter of a century."[12] Senator John Tower (R-TX), a program advocate, arranged Secretary Lehman's first flight on 26 March 1982, and Bell-Boeing followed that with a 31 March display on the Pentagon helo pad.[13] The XV-15 completed a 54 flight, 3500 mile

demonstration tour in 1984, which included a glimpse into the possible future of commuter service when it flew from downtown Manhattan to downtown Washington, D.C. in 45 minutes.[14] *Bell-Boeing was cultivating an extremely effective form of lobbying with the XV-15 that wasn't available to other aircraft programs, and people were becoming enamored with its obvious versatility and commercial potential. It seemed that everyone could find a use for the tiltrotor.*

On 15 July 1984, Bell-Boeing submitted its Full Scale Development (FSD) JVX proposal to the NASC, and one month later received a contract for long-lead detail designs and tooling for the JVX tiltrotor. On 15 January 1985 Secretary Lehman announced the JVX tiltrotor would be designated the V-22 Osprey.[15]

V-22 Osprey 1986-1988

Negotiations for the FSD contract were long and complicated. Secretary Lehman's vision of a 600 ship, 15 carrier Navy was being jeopardized by aircraft programs that had been escalating 10% - 20% above the rate of inflation.[16] He insisted on fixed-price contracts to control costs, convinced that the risk to industry would get them involved in reducing expenses.[17] Opponents of the fixed-price concept argued that it was hard to accurately estimate an entire development program that encompassed new technologies, and there was little incentive to exploit new discoveries when industry's eye was on the bottom line. But Lehman held fast, and when Bell-Boeing took into account the future profits from a long

production run, they accepted the risk and agreed to a fixed-price incentive contract [APP 1].

Lehman was a tough negotiator, arranging a contract ceiling price lower than the government's and Bell-Boeing's estimate of the development cost. To reduce costs further, the contract provided that both Bell and Boeing would build production facilities and compete against each other for the production contracts. Two other significant factors were included - DOD got a not-to-exceed (NTE) fixed-price option on the first 240 aircraft produced (approximately $16.6M per airframe), and Bell-Boeing would have to invest their own money to tool-up for full production.[18] In building 913 airframes, it would take nine years for Bell-Boeing to recoup the investment.[19]

Bell-Boeing believed that even if the FSD contract was exceeded they would recover the investment. In fact, they were so confident of the program that from the time of their FSD proposal until the fixed-price contract was approved, Bell-Boeing invested $125M of private capital to keep the program on schedule.[20] Major toolings were fabricated and composite layout and curing capabilities were developed. Major subcontracts were awarded to Grumman Aerospace, Lockheed, and General Electric. Expansion of facilities in Texas and Pennsylvania commenced.[21]

The guest pilot program was expanded and on 3 May 1986, Senator John Glenn (D-OH) became the second member of the Senate to fly the XV-15.[22] With his experience as a former Marine Corps test

pilot and astronaut, Senator Glenn was well qualified to evaluate and appreciate the tiltrotor's technology and capabilities. His influential position on the Senate Armed Services Committee (SASC) would prove valuable to the growing V-22 program.

Bell-Boeing agreed to market the V-22 and its derivatives jointly to international customers, and between 1986 and 1988 signed MOU's with industries in the United Kingdom, Japan, and Germany. In the U.S., the FAA Administrator, T. Allen McArtor, flew the XV-15 in August 1987, and within one year the FAA had formed a special project office on tiltrotors and received DOD's permission to participate in the V-22 test flight program, thus speeding up the commercial certification process.[13]

During this same period several contracted studies predicted tremendous capabilities for the V-22.[14] However, opposition to the program began to resurface. The Army R&D requirements had gone away, and the Air Force reduced their SOF airframes in response to a 1986 Deputy SECDEF agreement.[15] It was apparent the Marine Corps would be <u>the</u> primary customer, and PA&E again advocated that existing helicopters could be procured at a lesser cost and still handle the limited mission of Marine Amphibious Assault. SECDEF and SECNAV were still behind the V-22, so these concerns didn't go very far.

On 18 November 1987, the Army announced its withdrawal from

the program, being unable to buy production aircraft because of higher priority requirements and constrained fiscal requirements.[26] The total V-22 buy was now 657 aircraft which would cause a rise in the unit cost. Bell-Boeing still hoped the Army would purchase the V-22 in the 90's, but the V-22 program for now had lost a valuable service advocate.

On 23 May 1988, the first V-22 was rolled out at Bell's Flight Research Center in Arlington, Texas. Ironically, on the same day, PA&E circulated another paper recommending the program be terminated because of its high cost - now projected to be $23.7B.[27] As before, PA&E found little support in OSD.

As the end of 1988 drew near, the V-22 program was preparing for the test flight phase and anticipating production. The small undercurrent of opposition, along with the reduction of total airframes, had been overcome and were just a minor irritation. The country had a new Republican president and no great change was anticipated. The V-22 was to have its first flight within sixty days of the President's inauguration.

THE NEW ADMINISTRATION MOBILIZES

The Secretary of Defense

On 9 February 1989, President Bush proposed a defense freeze for FY 90, reducing the Reagan $315.2B request to $309B (just large

enough to cover inflation) while ordering a strategic review of U.S. defense requirements.[28] He expected spending cuts to be announced by the new SECDEF in mid-April, but then on 23 February the SASC voted 11-9 along party lines against John Tower's nomination.[29] DOD had been without a secretary for more than a month since the President had taken office.

The confirmation delay and increasing uncertainty led many top DOD officials to leave and take advantage of other employment opportunities. Only two assistant secretaries remained and became part of the Bush Administration - one was David Chu, now a relative fixture in PA&E.[30] Acting secretaries and deputies filled most positions, and sensitive political issues were held until the new SECDEF checked aboard.

On 24 February 1989, Bell-Boeing was contracted for long lead activity with the FY 89 advanced procurement (APN) money.[31] This was necessary to gear up subcontractors and have the production line ready for a 1992 delivery date of the first V-22's. The V-22 program was taking off, and the production workforce buildup began.

With the President's support, the Tower nomination was sent to the Senate floor, and after bitter debate along party lines, was rejected on 9 March 1989 by the vote of 53-47.[32] A strong V-22 advocate that helped promote the program in Congress was lost.

The next day, 10 March 1989, President Bush named Dick Cheney

(R-WY) as his new choice for Secretary of Defense. Cheney, the second ranking House Republican, was highly respected and a popular choice for the post. The confirmation process proceeded rapidly, because as Senator McCain (R-AZ) stated there "was a sense that there wasn't much going on on the other side of the river."[33] Cheney was quickly confirmed by the Senate on 17 March 1989 by the vote of 92-0, giving him an apparent mandate to run DOD as he saw fit. But unlike Tower, Cheney had no personal experience directing defense issues, and was the fifth Secretary of Defense to have no prior service in the armed forces.[34]

The Attack

Secretary Cheney quickly established himself as the man in charge at DOD. On 24 March he publicly chastised General Larry Welch, the Air Force Chief of Staff, for negotiating a compromise on strategic missile modernization with Congress.[35] After only one week, Cheney had let everyone know who would talk for DOD.

Cheney was in a tough situation. He had two high priority tasks and little time to accomplish them - fill the top civilian vacancies in the department, and cut $6B from the Reagan defense budget by 9 April 1989.[36] To solve the latter, it was natural that he'd turn to an experienced man for recommendations on program cuts - Dr. Chu, the ASD (PA&E), who had served in the Congressional Budget Office when Cheney was a congressman. Additionally, PA&E had been elevated from a Director to the Assistant Secretary level in 1988, so PA&E momentarily wielded a considerable amount of influence. Dr. Chu, having no success with earlier secretaries in

advocating cancellation of the V-22, found a new receptive ear. He again proposed buying additional existing helicopters to serve the narrow mission requirements of the Marine Corps.[37] It was expected that the Navy and Air Force requirements would go away once the Marines were dealt with.

More pressure to find cuts occurred when a 14 April White House/congressional agreement reduced the overall defense budget to $305.5B (a $10B reduction in the original defense request) in order to comply with the $100B Gramm-Rudman deficit ceiling for FY 90.[38] Most analysts thought the defense department wouldn't see any relief until new funds were found, and given the President's stance on new taxes, relief for the defense budget was politically unrealistic.[39] Cancellation of the $23B V-22 program would save almost $1.3B APN and $242M R&D money in the FY 90 budget, not to mention outlays in future years. The V-22 was suddenly vulnerable.

Secretary Cheney wanted to preserve strategic programs and evaluate the conventional programs for possible reductions. The issue of the V-22 was put before a Defense Resources Board (DRB) where the Navy and Marine Corps refuted Chu's evaluation and provided their own numbers. A skirmish soon developed over statistical data, and it was evident that the services and PA&E could not agree. Direct appeals to Cheney were made by General Gray, the Marine Corps Commandant, and General Lindsay, CINCSOF, but Cheney accepted Chu's position.

So on 19 April 1989, before the President's strategic review was complete,[40] OSD announced a new defense budget that pursued strategic program modernization (continuing the B-2/SDI programs at reduced levels) while trimming several conventional programs, including to everyone's surprise, the cancellation of the V-22 program.

THE CAMPAIGN FOR SURVIVAL

The V-22 Defense

The reaction of the V-22 supporters was to be expected. Sense of the Senate Resolution 115 - passed the following day - asked DOD to continue the V-22 program until the Senate had the opportunity to review the implications of termination. Several members of Congress expressed concern; Senator Glenn and Senator Stevens (D-AK) both issued statements asking Cheney to reconsider his decision.[41] These were the first indications of possible congressional opposition, but they weren't alone - several outcries were heard from other terminated or reduced programs.

Addressing the House Armed Services Committee (HASC) on 25 April 1989, Cheney and Admiral Crowe, the Chairman of the Joint Chiefs of Staff, acknowledged that the V-22 was a very useful aircraft, but too expensive for the highly specialized Marine Corps mission. Only once in the last 45 years would the Osprey have been warranted - and that was during the amphibious landing at Inchon.[42]

As compensation, Cheney proposed to buy 23 H-53 helicopters for $349M as a V-22 alternative.[43] No mention was made of the Navy's CSAR or Air Force's Special Operations requirements.

For years the Marines had counted on the Osprey to replace their old medium-lift helicopters. Lawrence Korb, a former Assistant SECDEF, found fault with Cheney in picking the Marine Corps' top procurement priority as one of his targets.[44] Cheney would have a major battle with the politically powerful Marine Corps,[45] whose substantial influence on the Hill is inversely proportional to their size - there were 10 senators and 21 representatives who had served in the Corps.[46] Because of the Welch incident, indirect avenues of approach would have to be used by the Marines to pursue the V-22.

Bell-Boeing immediately countered the OSD position and initiated another analysis in May 1989 from BDM International, Inc.,[47] this time using the H-53\H-60 alternative promoted by PA&E. Bell-Boeing raised another concern - if they continued without additional funding through September 1989, they would incur a $130M liability (APP 1). Allison, the engine manufacturer, had commercial prospects for the engine development, so they were willing to spend more of their obligated funds.

The V-22 program manager continued the FSD program, but Bell-Boeing proceeded at a reduced effort to minimize the financial risk. The contractors, in the process of building up the

production workforce to approximately 2500 people, began laying off workers. Specialists were a luxury the payroll couldn't afford, and once released migrated to other composite industries.[48] Progress toward production stopped, meaning the schedule would slip if the program was reinstated by Congress.

Bell-Boeing attempted to keep the endangered V-22 alive by initiating the Osprey Fax, a team publication to provide information to subcontractors and representatives. The small paper included news articles favorable to the V-22, techniques to use when asking for support, and instructions on letter writing campaigns. Osprey Fax was sent to every congressional office, the program managers organization, and the military services.[49] It was instrumental in promoting the V-22 as a national asset.

> "Mr. Cheney's decision, thus, is tantamount to sending a ten to fifteen year technological lead down the tube..."
>
> - Military Technology, June 1989[50]

Two of Cheney's decisions came under fire. The first was the cancellation of the V-22. The second was the proposal to end the production of the Grumman F-14, built on Long Island, New York. Over the past two years, cancellation of other defense contracts had hit employment hard on Long Island, and with the closing of the F-14 line, another 5600 jobs would be lost.[51] An informal V-22/F-14 alliance had formed. Not only did Grumman build the F-14, it

was also a major subcontractor for the V-22. The V-22 had gained needed support from New York to go along with Texas and Pennsylvania. Additional support came from states having subcontractors of both Bell-Boeing and Grumman (i.e., California, Ohio, and Massachusetts) and states with large Marine Corps bases, such as North Carolina.[52] It was proposed that money from Cheney's heavily funded strategic programs could be raided to continue conventional systems.

Was Cheney using the Osprey to protect other programs, hoping to have Congress force the V-22 on DOD in return for other program considerations? This ploy had worked during past budget cycles.[53] Republican members of Congress inquired about a possible compromise through the Secretary's office, but received no response.[54] This didn't seem to be a "party" matter; the Administration wasn't interested in trades. With the White House/Congressional defense cap, funding the V-22 meant reductions elsewhere. It was apparent that DOD was serious about cutting the Osprey.

Sikorsky Helicopter, manufacturer of PA&E's alternative H-53/H-60 helicopter fleet, was actively supporting OSD's position, so all stops had to be pulled out to save the V-22.[55] Two additional aspects of the V-22 programs were now emphasized - promotion of the potential to revolutionize civil aviation and the shadow of unemployment. The V-22 would eventually involve 10,000 jobs in 45 states.[56] The goal was to convince members of Congress

as the appropriations and authorization bills made their way through the legislative process.

The Battle for Congress

> There's no room for even the deserving add-ons, let alone the ones that go "oink."
>
> - Rep. Les Aspin, D-WI[57]

> Some of us have been in the defense business longer than [Cheney] has.
>
> - Rep. Marvin Leath, D-TX[58]

In June, the proposed FY 90 defense budget started through the congressional authorization and appropriations process [APP 3]. The V-22 prospects were dealt a severe blow when Rep. Jim Wright (D-TX), the Speaker of the House and a strong V-22 supporter, resigned because of pending ethics charges.[59] A major obstacle to the Administration was removed, and now Senator Nunn (D-GA) and Representative Les Aspin (D-WI), chairmen of the respective Armed Services Committees, were counted on to push the budget request through.

Short-fused congressional inquiries about the V-22 flew directly to interested parties, often bypassing OSD. In order to control the situation, OSD directed on 14 June that any information on the V-22 for external dissemination would go through OSD for Legislative Affairs (LA), making the V-22 the only program with this restriction.[60] Information requests took a long time to sift

through the layers of bureaucracy. The OSD(LA) position was "the V-22 program doesn't exist in the Administration's budget",[61] and offices outside the acquisition hierarchy/program manager's domain were told to purge their files of V-22 data. The formal channels of communication had been blocked; the informal ones grew.

20 June - The House Armed Services subcommittee on Procurement, chaired by Rep. Aspin, voted 10-9 to endorse without change the proposed budget, a victory for Cheney and the Administration. This blocked the efforts of some on the subcommittee to restore funds for the V-22 and F-14 by redirecting funds programmed for strategic systems.[62] Aspin credited Secretary Cheney and Northrup for their effective lobbying, praising Northrup for coming down on the side of "good government".[63] Northrup was the prime contractor for the B-2 and had Boeing as a major subcontractor, so Boeing was unable to lobby for the V-22 at the expense of Northrup.

22 June - The House Armed Services subcommittee on Research and Development, led by the efforts of Rep. Curt Weldon (R-PA), marked up its portion of the authorization bill by shifting $351M (from the B-2 and CH-53E requests) into the V-22 development account.[64]

In the full HASC, Aspin opposed any change to Cheney's proposal. Aspin's position as chairman allowed him to set the strategy - he would allow the full committee to vote on all

procurement amendments as a package, and then offer Cheney's original request as an alternative.[65] The expectation was the catch-all committee package would end up fiscally unrealistic or politically unacceptable.

The final committee proposal included $508M for the V-22 ($351M R&D, $157M APN) and $230M to continue F-14 production. When Aspin presented Cheney's package as the final alternative, it was rejected on a tie vote, 26-26, and the authorization bill, with the V-22, was on its way to the House floor.[66] A single vote represented a major setback for Aspin and the Administration, and an 11th hour reprieve for the V-22 and F-14. The Marines had gained a foothold on the beach.

The HASC also directed OSD to "provide with the FY 91 budget request an independent Cost and Operational Effectiveness Analysis (COEA) of all reasonable V-22 alternatives," concerned that the new SECDEF may not have had the benefit of one.[67] PA&E then contracted the Institute for Defense Analysis (IDA), a federal agency that carries out analyses for OSD, to conduct the study. An executive steering group, chaired by PA&E, would interface with IDA.[68]

Bell-Boeing did not trust PA&E's objectivity and was concerned when Dr. Dean Simmons, the IDA Director for Systems Evaluation, was named project leader for the V-22 study. Dr. Simmons had been involved in a negative study on the LHX program and was viewed as possibly biased against the V-22.[69] Bell Boeing immediately put Lawrence Livermore National Laboratory (LLL) under contract to

complete a parallel study. LLL accepted the contract with the stipulation that the results would be published regardless of the outcome.[10] *It was a risk Bell-Boeing would take, since previous studies had been highly favorable. Bell-Boeing also accelerated the V-22 flight test program to get as much validated data as possible included in both studies.*[11]

On 19-20 July, the House Appropriations subcommittee on Defense also rejected the administrations decision to cancel the V-22. Passing the Appropriations bill on 4 August, the House had served notice that they considered modern conventional forces had become more important and useful than costly strategic programs.

With Senator Nunn running the Armed Services Committee (SASC), the Senate showed great reluctance to cut into the strategic programs as proposed by the House and voiced strong support for Cheney's tough decisions. But surprisingly, through substantial efforts by Senator Glenn, Senator Stevens, and Senator Spector (R-PA), the Senate also voted to continue the V-22.[12]

Joint authorization/appropriations conferees started meeting informally on 8 September and eventually worked out a conference report along Senate guidelines - allocating $255M to complete development of the V-22, authorizing the Pentagon to spend the unused FY 89 appropriated funds to prepare for production, and deferring until 1990 a decision to go into actual production.[13] Both Appropriations and Authorization conference reports indicated the production decision would be influenced by the COEA study being

done by IDA [APP 2]. It appeared the V-22 had won.

THE FY 90 CAMPAIGN

The Administration's Counteroffensive

On 1 December 1989, just over a week after Congress adjourned for the year, OSD achieved tactical surprise when Deputy Secretary Atwood instructed the Navy to terminate all APN contracts for the V-22. OSD had no plans to procure the V-22, and since Congress had not put any APN funds in the FY 90 budget, the decision made fiscal sense. The cancellations were considered money-saving opportunities in preparation for the FY 91 budget. Accordingly, the Navy deobligated $200M from the Bell-Boeing contract.

The decision had other implications. By terminating the contracts instead of issuing a work stoppage, the Administration guaranteed a production delay of at least a year. Since all contracts would have to be renegotiated, V-22 costs would be driven up. The increased costs would make the program less palatable to Congress.

However, this was not in line with the November conference reports stating Congress would decide upon production after evaluating the FY 91 budget request and the HASC directed COEA. Several key congressional supporters were quick to chastise OSD, stating that the intent of Congress had been ignored [APP 2].

Even though the terminations meant layoffs and uncertainty for Bell-Boeing, there was a beneficial side. Since November, they had been grappling with the production options for the first 240 aircraft. Because of escalating cost and the reduction of production aircraft, Bell-Boeing was going to have trouble meeting the NTE price tag and still make a profit."[14] Their severe financial dilemma had been conveniently solved by OSD. If production was decided upon, contracts could be renegotiated (hopefully on a cost-type basis) to ensure a healthier economic position. The price of the V-22 was going up.

In January 1990, Japan's Minister of International Trade and Industry commented during a visit to Bell Helicopter,

> If you produce this [V-22] aircraft, I guarantee you we will buy it. If you do not, I guarantee you <u>we</u> will build it."[15]

The prospect of foreign competition was growing. Eurofar was working on tiltrotor technology in Europe, and Ishida of Japan had located a research facility in Fort Worth and hired 8 ex-Bell engineers to develop the TW-68, a tiltwing aircraft.[16] The cry to preserve American technology was being heard on the Hill.

When the SECDEF presented the FY 91 request on 1 February 1990, the V-22 was not included. OSD again requested 23 H-53's for the Marines as a cheaper alternative to the V-22."[17] OSD had another surprise - they intended to defer $200M from the canceled

APN contracts to pay for other FY 91 programs considered more important. Deferrals are allowed for purposes of management, such as accelerating other urgently needed programs, but not to support policy decisions. The deferral was sent to the GAO for a ruling, but the bottom line, according to OSD Comptroller Sean O'Keefe, was "we ain't going to spend the money."[78]

The Birth of a Coalition

A small number of industry and congressional supporters organized in February 1990 to evaluate the V-22's future. Realizing OSD's resistance, this group took the offensive and formed the Tiltrotor Technology Coalition, Inc. Rep. Curt Weldon (R-PA), a key Coalition leader whose district included 5,000 - 6,000 Boeing workers (600 on the V-22),[79] was concerned that if the V-22 was to survive OSD's second attack, a well carried out plan involving more than the military would have to be implemented.

The Coalition included several influential industrialists, and 11 congressional members, 10 from Pennsylvania, Texas, and New York. These bipartisan lawmakers held a press conference on 21 February 1990 at the National Air and Space Museum to voice their dissatisfaction with DOD's decisions.[80] Their initial objectives included -

(1) an attempt to get the $200M in FY 89 funds withheld by DOD included in the FY 91 budget,

(2) to emphasize that the V-22 could meet a wide variety of military missions,

(3) promoting V-22 commercial prospects and their dependence upon aircraft production/operation,

(4) keeping the FAA involved in tiltrotor research and evaluation, and

(5) making known the potential loss of American jobs to foreign competition.[81]

The budding coalition was assisted by the 20 February HASC testimony of General Al Gray, who blasted the proposal to substitute H-53/H-60 helicopters for the V-22 as "totally ridiculous" and tactically flawed.[82] LtGen Pittman, the head of Marine Corps Aviation, made it known through the media that the Marines hadn't given up on a tiltrotor concept, stating, "We are still convinced that tiltrotor or tiltwing technology is the way to go, because the helicopter is physically constrained..."[83] The Marines hadn't spoken against the decision to terminate the V-22, but Congress knew what the Marines wanted.

By 7 March 1990, the GAO ruled that DOD had acted improperly in terminating the contracts funded with the FY 89 APN funds. OSD seemed to be losing ground, and on 22 March, Secretary Cheney justifiably complained of "a certain hypocrisy" when Congress wants the defense budget cut but isn't willing to close programs or facilities.[84]

April 1990 saw some significant victories for the V-22 and growth for the Coalition. The Administration was withdrawing the deferral request. On 13 April, the BDM study was published, and found the V-22 option was more survivable and delivered twice the troops, equipment, and firepower.[85] Sikorsky publicly disagreed

with the conclusion the V-22 offered more advantages than the "all-Sikorsky" alternative,[66] but Bell-Boeing had the ammunition they thought they'd need to refute the upcoming IDA study.

The preliminary IDA study had been completed and presented to senior Defense officials, and guarded reports slowly circulated that the analysis showed cost effectiveness favorable to the V-22. Rep. Weldon commented "...we're hearing a lot of preliminary data that apparently shows the V-22 in a very positive light. And we've been reading that Chu was livid with some of the findings."[67]

Bell-Boeing refined their attack on OSD's center of gravity - the program cost. To stay within the Marine Corps five-year budget plan and to offset PA&E's assertion that the helicopter option was $5-8B cheaper in the near-term, Bell-Boeing proposed to reduce the original 12 pilot-production aircraft to four, and slow down production rates in each year.[68] This would make the V-22 early production cost equivalent to a helicopter purchase. But Bell-Boeing had to exercise caution, because two competing production lines (a FSD contract condition) would unacceptably drive up unit costs with production rates less than 60 aircraft per year.[69] Bell-Boeing now had to convince OSD that one production facility made economic sense.

On 25 April, the Aviation Subcommittee for the House Committee on Public Works and Transportation held hearings on civil

applications of the tiltrotor technology. Bell-Boeing used the opportunity to bring their subcontractors to Washington, D.C. for a program briefing, then arranged for the industry officials to meet with their state representatives.[10] Knowing the success of past demonstrations in building support, Bell-Boeing also joined with the subcommittee chairman, Rep. Oberstar (D-MN), to arrange for the XV-15 to fly to Washington, D.C. and land on the east Capital grounds, normally a prohibited flying area. Oberstar convinced the Speaker the flight was "essential government business." The Administration tried to use the FAA to deny the flight but congressional influence overcame the attempts. 18 new House members joined the Coalition that day.[11]

Additional support surfaced in the House Merchant Marine and Fisheries subcommittee, when Admiral Paul Yost said the Coast Guard is "very interested in the aircraft and ...the technology". He advocated the Coast Guard should get involved because they would like to acquire the V-22 in the future.[12]

V-22 commercial prospects were raised when Bell-Boeing's Japanese trading partners, Mitsui and C. Itoh, concluded civilian development and certification costs could be greater than expected.[13] If the V-22 lost government funding, the civil and military development would have to be supported privately. The Japanese had no desire to support military R&D, the risk was too high for corporate investment. Bell-Boeing would have to stop the

military program to find international interest and funding, opening the possibility that the technology would be produced or sold abroad. Leonard Horner, president of Bell Helicopters, summed up the situation by saying,

> *...Customers in the commercial world say without question, "You've got to prove that the technology will really work, and you better get DOD to use it first."...*[94]

The IDA Study

In May 1990, the House was examining the budget and V-22 number 3 made its first flight, but all interest seemed to be on the upcoming IDA study. The Coalition had grown to almost 100 bipartisan members, and there were an estimated 300 V-22 supporters on the House floor. Rep. Weldon believed the V-22 would be successful with or without the IDA study, but everyone was concerned with its final form.[95]

OSD released the IDA study on 29 June 1990, the day Congress adjourned for the Fourth of July recess (which prevented an immediate congressional response). Secretary Cheney also forwarded a letter to Congress that explained his position on the study -

(1) The V-22 is a excellent aircraft, but simply too expensive.

(2) To pay for the V-22, OSD would have to give up amphibious shipping.

(3) The requirement for Marine medium lift still exists, but can be met with less expensive alternatives.

(4) The key assumptions made by IDA were flawed (V-22 speed, sortie rate, reliability, production rate, and near-term costs), making the conclusions of the study suspect.

(5) There was no overwhelming evidence that the V-22 option was superior, and the original decision to cancel the program was still valid."[16]

But V-22 supporters reading the same report saw something different -

(1) The V-22 is the most cost effective alternative.

(2) The V-22 is more survivable.

(3) The V-22 can cover a broad range of missions.

The IDA study was, to the surprise of Bell-Boeing, similar to the BDM study released in April. Then on 2 July 1990, LLL published its study, concluding the V-22 more effective in supporting ground combat."[17]

Pete Williams, OSD(PA), put the OSD position in perspective on 9 July 1990 by stating,

> ...maybe maintenance costs are cheaper if you buy a Rolls Royce than if you buy a used car over the life cycle, but the point is you've got to come up with the bucks up front to buy a Rolls Royce..."[18]

The 1990 Congressional Battles

The two rival positions met on 19 July 1990 in the Senate Appropriations Defense Subcommittee hearings. During these

hearings, Dr. Chu reiterated the points made in the SECDEF letter and was adamant that the V-22 was not desired by OSD. Dr. Dean Simmons explained the IDA analysis had tried to be conservative and the V-22 fared well. The programs evaluated all required different near-term funding levels, the V-22 having the advantage in the long term, but being more expensive in the short run.

The senators also voiced their opinions. Some were upset that the study was reviewed without congressional participation while its release was delayed. Senator Inouye (D-HI), the chairman of the defense subcommittee, was even more pointed,

> ....I have been a member of the subcommittee for about 20 years now. During that time I have had the opportunity to read several reports issued by IDA. To the best of my recollection, this is the first time that the Office of the Secretary of Defense has come out with full-force to attack the assumptions, the credibility, the results, and the recommendations of the IDA..."

Dr. Chu made an interesting remark that revealed the early roots of a later OSD/Atwood policy,

> ....I do not think the technology will go away...The development program is virtually complete. There is not that much more to go. It is a set of ideas you can put on the shelf, and if circumstances later dictate their revival, it is obviously an option we could come back to....[101]

In the HASC, Chairman Aspin made two significant alliances to guarantee a dedicated block of votes. The first was siding with the B-2 opponents to cut funding for the B-2. The second was to change last years position and support the V-22. Aspin now saw the V-22 as an interesting, adaptable system in a rapidly changing

world.[101]

In August 1990, OSD formed a unique working group headed by Legislative Affairs to expand a strategy that supported DOD's opposition to V-22 funding. The holes in the congressional dike had to be patched. By all accounts Cheney was having remarkable political success for his other proposals. The SASC agreed to go along with all the programs he sought to terminate but one - the V-22. The V-22 seemed to stick in Cheney's craw. Worse, the Senate, long the weakest link in the Coalition plans, was showing signs of additional V-22 support.

Bell-Boeing did not rest. They attacked the cost figures used by OSD, and contended the status of their test program was inaccurately portrayed by OSD. They noted that DOD had put other aircraft into production before flight test.[102] Bell-Boeing made inroads in the Administration by using the "guest pilot" program again - Secretary of Transportation, Samuel Skinner (now the White House Chief of Staff), flew the XV-15 on 29 October and proclaimed the tiltrotor a commercial aircraft of the future.[103]

The V-22 support in Congress had obviously grown beyond a "pork barrel" program. The legislative constituency had crossed party lines and into states and districts not directly involved with the V-22. The V-22 had become a political force with a life of its own. When the appropriations and authorization bills made

lit through Congress [APP 3], the V-22 was included with funding along House guidelines.

THE THIRD ASSAULT

The Calm Before the Storm

Desert Shield and Desert Storm provided a lull in the V-22 controversy, with players jockeying for position prior to the next budget submission. The V-22 program office had generated a preliminary production plan with a long-lead kickoff in January 1991, and a production decision point in December 1991. The proposal included 10 aircraft instead of the original 12 in order to reduce the cost on the renegotiated contracts. All that was needed was the funds authorized by Congress. But Deputy SECDEF Atwood announced it was too early to release the funds (OSD didn't want the aircraft in production).[104]

On 4 February 1991, OSD's FY 92 budget request found Cheney remaining firm; the department had no plans to buy the expensive Osprey. Cheney changed tactics and proposed to finish the V-22 development program using previously appropriated APN funds, thereby effectively eliminating all production money. For the third straight request, Cheney asked for 20 more H-53 helicopters as compensation for the Marines.[105]

Meanwhile, the concept of a commercial tiltrotor was not going away. In March 1991, Jim McDaniel, the FAA's vertical flight

program director, commented that "there's a tremendous capacity potential" for the tiltrotor, and he hoped to have a civilian tiltrotor licensed to fly by 1997.[106] With all this "noise", OSD was having difficulty convincing legislators not to support tiltrotor commercial applications with DOD appropriations. They effectively argued that before a commercial tiltrotor should be introduced, the nation needed to plan for the supporting infrastructure (facilities, air traffic control systems, etc.). Also, no airlines were beating down the door asking for one.

Congress takes Direct Action

In March 1991, the FY 91 "Dire Emergency" Supplemental appropriations bill was passed. The bill, including emergency funding related to Desert Storm, also required DOD to obligate the withheld FY 89 APN funds ($200M) within 60 days.[107] The Congressional involvement had reached another level - OSD could not ignore legislative intent when actions were dictated by law.

As the FY 92 Defense Authorization bill began its way through the congressional process in May 1991 [APP 3], the Coalition had grown to over 140 legislative members.[108] The AFL-CIO was now supporting the V-22, and Allison, a subsidiary of General Motors, assisted in convincing the UAW to join the Coalition. V-22 support appeared stronger than in 1990.

Rep. Aspin and a HASC majority (45-6) authorized $625M in new money to build 3 new "production-type" V-22 aircraft. The House

again showed a willingness to cut the high cost strategic programs Cheney wanted. Aspin used the argument that the FY 92 budget didn't account for the end of Desert Storm or the changing world situation.[10]

On 10 June 1991 the Navy obligated the $200M as directed by the Dire Emergency Supplemental Bill and made the final payment on the old fixed-price FSD contract. From now on, all FSD costs would be borne by Bell-Boeing.

The Mishap

In what seemed to be a major setback to the V-22 program, the fifth V-22 crashed while trying to hover on its first flight. The accident demonstrated how programs can be casualties of vacillating direction, funding, and lay-offs. When funds were cut, work on the flight stabilization system was halted and the aircraft was put into storage. When construction was resumed a year later, the technician who worked on the system was gone. The new man continued the job, but unknowingly reversed some work that had been completed a year earlier. This led to a stabilization problem and the subsequent crash.[11]

Bell-Boeing reacted quickly - sending all available information to legislators, concentrating on Senator Glenn. With aggressive lobbying, Congress was convinced that although some difficulties were to be expected, the V-22 test program was highly successful. A SASC staffer "marveled at the unusual way everyone

still supported the V-22 program."[111] The flight control problems were corrected, and on 11 September 1991, the FSD flight test program was resumed.

Bell-Boeing's involvement with demonstration flights had become a wise investment. Over 175 dignitaries had experienced tiltrotor flight through the guest pilot program.[112] On 18 October 1991, a V-22 completed a demonstration flight before the House Committee on Science, Space and Technology, whose members could influence civil tiltrotor development.[113] Bell-Boeing again proved that the aircraft could sell itself.

The Authorization and Appropriation conferences again went with the House guidelines for the V-22, and approved the plan to build 3 aircraft in FY 92. A unique aspect was that the aircraft would be "built on tooling which qualifies a production line". Without offering any APN funds, Congress and industry bypassed Cheney's intent by building a "production line" with R&D funds.

THE RUSH TO RECONSTITUTE

The DCAA Audit

After the Navy awarded contract additions in June, the OSD Comptroller, Sean O'Keefe, requested a Defense Contract Audit Agency (DCAA) audit on the follow-on development contracts. The

audit was to (1) evaluate the validity of FSD contract progress payments, (2) ensure the FSD contract wasn't modified because of the follow-on contracts, (3) assess FSD progress, and (4) identify any unresolved issues.[114] O'Keefe didn't want the V-22 to become another A-12.[115]

The December 1991 DCAA audit results raised questions about the projected cost growth. DCAA determined the cost estimates to complete FSD were "unstable and potentially underestimated." O'Keefe said the overruns were likely to continue, and the "execution of the remainder of the FSD contract contains a degree of risk."[116]

V-22 supporters claimed the program had slipped because of funding uncertainties and the mishap. Bell-Boeing believed the original program was only about two years behind schedule, and the overruns were overstated and caused in part by DOD itself. There was concern that the audit would be used as justification to attempt to ground the V-22 again during the next budget cycle.

On 3 December, Comptroller O'Keefe in a budget decision outlined Cheney's wishes to develop a new helicopter as the Marines medium-lift replacement.[117] Until that replacement helicopter could be placed in service, he proposed to reopen the H-46 production line and supply "new" H-46's to the fleet. This was an old idea, but maybe this time the tactic would effectively eliminate the need for the V-22.

Bell-Boeing attacked OSD's major objection again - the cost. Tim Fehr, deputy director of the V-22 Joint Program Office, announced a goal of reducing V-22 production costs "by at least 15% and eventually 25%."[118] *Bell-Boeing had to reduce the cost to a point where the Secretary could support it. New production techniques would be tried in the engineering and manufacturing phase, but that phase depended on OSD releasing funds for a new contract.*

In late January 1992, after a DAB hearing, DOD announced it needed more time before deciding to proceed with building the preproduction prototypes. Using the DCAA audit as support, Comptroller O'Keefe reiterated the cost and program uncertainties, indicated the program needed substantial adjustment, and that there wasn't enough time remaining in the fiscal year to make use of the funds.[119] Industry was concerned that Cheney was now considering termination of the V-22 contract for default.[120]

The Battle Returns to Congress

The FY 93 budget request again omitted the V-22. The first House subcommittee hearings on the budget found the lines of battle more keenly drawn than ever. Gerald Cann, Navy Director for Acquisition, stated that Cheney would continue to withhold funds until Bell-Boeing resolved weight, scheduling, and cost issues. Subsequently, DOD pushed the completion of the next development phase into 1998.

Congressional response was sharp. Rep. Geren blamed Cheney for driving up the cost by delaying the program. Rep. Dornan (R-CA) countered that the Pentagon had "an absolute mental block" over the V-22, and argued that David Chu "should have been fired years ago."[121] Even House Speaker Tom Foley (D-WA) sent a letter to Cheney accusing him of "not complying with the law and congressional intent."[122]

David Chu pointed out in March 1992 that during a time of reduced budgets and threats, the COEA report would become an integral part of the acquisition process to insure only affordable systems are produced.[123] V-22 advocates noted that the Osprey program had a very favorable COEA in 1990. Court action is now being considered to overrule Cheney's refusal to execute the congressional plan for the V-22.[124]

OSD still sees the V-22 as an expensive aircraft that can not be carried in an era of shrinking defense budgets. The voter backlash against Congress during this election year, particularly in the House, may serve to eliminate some obstacles to the Administration's control of acquisition and strategy.

The next round has begun...

REFLECTIONS AND PROSPECTS

To a degree, the Marines have tied their future to the tiltrotor. But the V-22 program illustrates that the Corps, even with their enviable influence, has a difficult time supporting a major acquisition on their own. The trouble experienced initiating the Marine AV-8 program has reemerged with the V-22. Without substantial support from other services, the relatively small Marine Corps finds it hard to justify a development program that will end up with small, inefficient production runs and high unit costs. This will be exacerbated during the next few years of declining defense budgets. The Marines must dovetail their programs with other high priority requirements. Unfortunately, the V-22 was not - the Army (LHX), Navy (A-12), and Air Force (B-2/C-17) had bigger fish to fry. The Marines expended a great deal of energy on the Osprey and have little to show for it. After the crucial withdrawal of the Army, it would have been more productive to place efforts elsewhere. Meanwhile, the date the Marines need a medium-lift replacement aircraft draws nearer. The V-22, touted for its civilian potential and ability to satisfy a wide variety of missions, needs broader and more outspoken military support to become more than just a prototype aircraft. This is unlikely while Cheney remains as SECDEF.

Rejected ideas hibernate in bureaucracies, to awaken during more opportune times. Career bureaucrats often outlast the

politically appointed civilian leaders and the mobile military officers and keep these ideas alive. Dr. Chu's proposals were not seriously listened to for over four years, so he kept them stored in a desk drawer. Dr. Chu outlasted two SECDEFs, two SECNAVs, and two CNOs who opposed his beliefs, and emerged to influence the decision to terminate the V-22.

Bureaucratic decisions are hard to reverse, especially when there is little or no change in leadership. As Dr. Chu's analysis and recommendations were increasingly criticized, his influence within OSD waned, but OSD's decision to cancel the V-22 remained. Others actors, like Sean O'Keefe, were pushed forward to carry the banner, often with different justification to support the decision. The argument against the V-22 has evolved - from different helicopter alternatives to prototype discrepancies to contract obligations to increasing cost - as the tip of OSD's spear shifted from the ASD (PA&E) to the DOD Comptroller. The V-22 debate illustrates that government decisions not directly beholden to an electorate will only change when the leadership is replaced.

Government/Industry interactions revolve around program contracts. The V-22, along with the Navy's A-12 and P-7 aircraft, demonstrate that fixed-price type contracts can potentially hurt development programs, especially when they involve new technologies. These programs run greater risk of cancellation. The initial reasons are many - contractor miscalculations, being too optimistic about the risks, or using a buy-in just to win a

contract. But once committed, industry is put at risk when there is a reduction or elimination of production orders, especially during periods of economic downturn. The government will push a company to complete the contract, so the company must look elsewhere for funds, or look for ways to cut expenses. If the company becomes financially strained, performance may be affected. Once the contract ceiling price is exceeded, a company can either keep throwing money down what may become a bottomless pit, or default. In this case, neither the government nor industry wins.

On the other hand, fixed-price contracts did not just happen - they were a reaction to apparent abuses by industry. Contractors knew that cost overruns would be covered by the government, so bidding low to earn contracts was a common practice. Fixed-price brought discipline to the process. Boeing had more accountants assigned to the fixed-price V-22 program than to any other military contract.[125]

As the contract pendulum swung toward fixed-price, it may have gone too far. Government seemed to want more than its money could reasonably buy. In 1986, 71 of 75 fixed-price contracts were awarded at prices <u>below</u> the government's own estimates, and the V-22 was one of them.[126] But who forced Bell-Boeing to sign? Industry naively went along based on unreasonable expectations of long production runs. Government and industry decisions that depend on a future yet to be elected may be unwise. Fixed-price contracts have gotten a bad name, but the blame can be shared by

both government and industry.

The 1988 congressional requirement for cost-type contracts on major development programs is only a partial solution. What is needed is a more cooperative relationship between industry and government.

In the near term, the V-22 will continue to be a political pawn. During an election year and a shrinking defense budget, the V-22 may find itself in competition with other programs that have previously lent support. If the Democrats find their way into the White House, the V-22 program will probably be accelerated given its remarkable support on the Hill. If the Bush Administration remains we can expect more annual battles, particularly with Cheney. The decision on the V-22 is now personal to those involved.

The executive branch and OSD have demonstrated the ability to overcome the intent of Congress in the V-22 struggle by delaying the program. OSD uses time as an ally to drive the program's price up while waiting for the make-up of Congress to change. The V-22 that was a good bargain for the government in 1989 may be unaffordable today. It has more than doubled in price, and soon will reach a point where it is unacceptable even to Congress. OSD will try to reach that point before a production decision is enforced.

Even with the difficulties the V-22 program has had in the

defense acquisition process, members of Congress and the DOD surprisingly believe in the system. It works remarkably well in a dynamic democratic environment, and brings to light aspects of national security that need to be addressed - economic, political, and military. Congress wants DOD to have flexibility in managing defense programs; DOD wants Congress to be aware of defense capabilities. Each can normally accommodate the desires of the other. The V-22 is viewed as an unusual exception where informal processes have broken down the formal system to the extent that compromise is remote.

The role of industry in this arena is critical. Industry needs program stability, which enhances long range business planning and contributes to its economic health and technological improvement. Because this nation has no coherent industrial strategy to protect the defense technology base, industry tries to protect itself through commercial spinoffs or by spreading subcontracts over different districts and states to ensure a minimum base of political support. This can add another obstacle to rational decisionmaking.

The nation's acquisition policy should change. Stability can be enhanced through biannual budgeting or multi-year funding. Even with low levels of funding, industry can find efficient/survivable rates of low production if programs were stable. But biannual budgets are probably not politically feasible in the near future, and multi-year funding is not realistic during this time of decreasing defense budgets.

Belief in the new DOD concept to complete program development (possibly through prototyping) and put the plans "on the shelf" is uninformed. An essential part of the industrial base is the manufacturing process, and industry (prime and subcontractors) currently makes its profits through manufacturing. If a decision is made to take a program from the shelf into production, industry would almost have to start from scratch. Technology is vested in people, and if plans are not used, people will move on. If the V-22 is placed on the shelf, we will lose the ability to make it, and subsidized foreign competition will take over.

One solution to this dilemma is to look beyond DOD - to a national industrial policy that protects selected technologies (like the V-22). If the defense industry needs to produce to remain viable, DOD needs help. Since Congress wants the V-22 partly because of commercial applications, other agencies should be called on to participate - like the Department of Transportation. International teaming with foreign industries and governments would ease the financial burden, and allow programs to develop commercial and military applications. Government and industry strategy needs to be broadened, and once accomplished, DOD and Congress can compromise on the V-22 and have a face-saving way out of this conflict.

What has the V-22 conflict done to enhance national security? Even if the V-22 dies, the process it's gone through has shown that in austere budget years, the nation must, whenever possible,

broaden a system's application in a way that benefits other agencies or governments. This may not deliver an optimal system for a particular military service, but a broad economic, political, and military support base will prevent a system from vanishing. By changing our philosophy, and using cooperation and compromise, more systems could be funded to keep the nation ahead of potential threats.

Appendix 1

V-22 CONTRACTS[127]

FSD Fixed-Price Incentive Airframe contract - Bell-Boeing

	Initial Contract N00019-85-C-0145	Total Contract
Target Cost	$ 1,534 M	$ 1,547 M
Profit	$ 180 M	$ 181 M
Target Price	$ 1,714 M	$ 1,728 M
Ceiling Price	$ 1,810 M	$ 1,825 M
Share ratio	60\40	60\40

FSD provides design, development, and manufacture of 6 V-22 aircraft.

NTE option for 12 pilot-production aircraft - $ 1,200 M
(includes $ 300 M for production tooling)

NTE option for 228 production aircraft - $ 3,800 M
(includes first 3 lots)

Progress payments are 88.5% of costs incurred
(less a loss ratio factor based on any projected overruns)

Government and industry share costs between target and ceiling price.

Industry liable for all costs exceeding ceiling price.

Scheduled completion date - June 1992

FSD Firm Fixed-Price Engine Contract (T406) - Allison

	Initial Contract N00019-85-C-0034	Total Contract
Total Price	$ 105.7 M	$ 147.1 M

FFP contract to develop and provide engines to Bell-Boeing on a GFE basis.

Allison allowed to produce commercial engine (GMA 2100) incorporating T406 technology in 1992.

Bell-Boeing Contractor Position
(As of March 1989)

Government Obligations to Date		$ 1,488 M
Actual Costs Incurred	-	$ 1,425 M
Open Commitments to Vendor ($50-60M)	-	$ 50 M
April Labor ($20-25M)	-	$ 25 M
Termination Costs	-	$ 15 M
Labor Severance Pay	-	$ 3 M
Net Loss (April 1989)	-	**$ 30 M**
Operating Costs of $20M/Month (Continue Program until September)	-	$ 100 M
Total Possible Costs	-	**$ 130 M**

Appendix 2

Conference Report statements regarding importance of IDA study[128]

"...the conferees believe that the study should be used as a basis for the decision (on whether) to begin production of the V-22 in fiscal year 1991."

- Appropriations Conference Report
November 1989

"...the conferees note that the future of the V-22 will be considered on the basis of the information that will be provided as a consequence of those studies."

- Authorization Conference Report
November 1989

Congressional Reaction to Termination of Long-Lead Contracts

"We are surprised that you have taken this back-door approach to try and circumvent the intent of Congress. Congress appropriated that money for production of the V-22, and those funds should be spent as directed."

- Rep. Pete Geren (D-TX)/Martin Frost
Letter to Secretary Cheney, 6 Dec 1989

"The termination order issued by Mr. Atwood last week directly challenges the delicately crafted conference agreement and congressional directives on V-22. We accepted in good faith your pledge to keep an open mind on V-22 production until you have the benefit on reviewing the program now under way. Now it appears an attempt is being made to "starve" the V-22 program..."

- Rep Curt Weldon (R-PA)

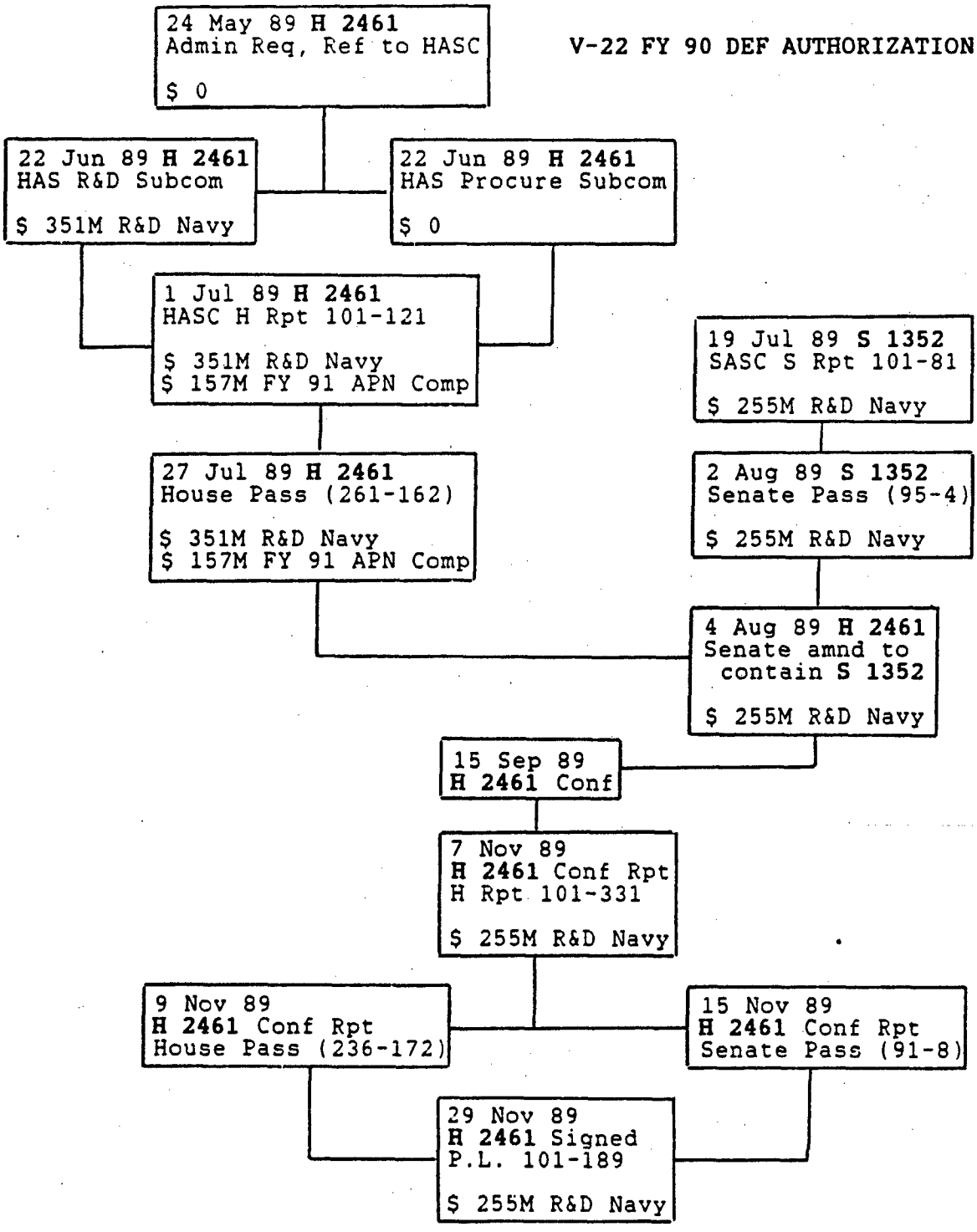
Letter to Secretary Cheney, 5 Dec 1989

"After a long and difficult authorization conference, the conferees, and then a sizeable majority of both houses of Congress, authorized the obligation of prior-year procurement funds for the V-22. Further, the Appropriations Act subsequently stated in its direction to the Department of Defense that "...it is important that the Department obligate the remainder of the Fiscal Year 1989 advance procurement funds in order to retain the option to execute a production decision in Fiscal Year 1991." There could be no clearer direction to the Department of Defense requiring use of the 1989 V-22 advance procurement funds than that contained in those two Acts."

- Senator John Glenn (D-OH)

Letter to Secretary Cheney, 12 Dec 1989

Appendix 3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V-22 FY 90 DEF AUTHORIZATION
22 Jun 89 H 2461
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$ 157M FY 91 APN Comp
19 Jul 89 S 1352
SASC S Rpt 101-81
$ 255M R&D Navy
27 Jul 89 H 2461
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2 Aug 89 S 1352
Senate Pass (95-4)
$ 255M R&D Navy
4 Aug 89 H 2461
Senate amnd to
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15 Sep 89
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7 Nov 89
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H Rpt 101-331
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9 Nov 89
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House Pass (236-172)
15 Nov 89
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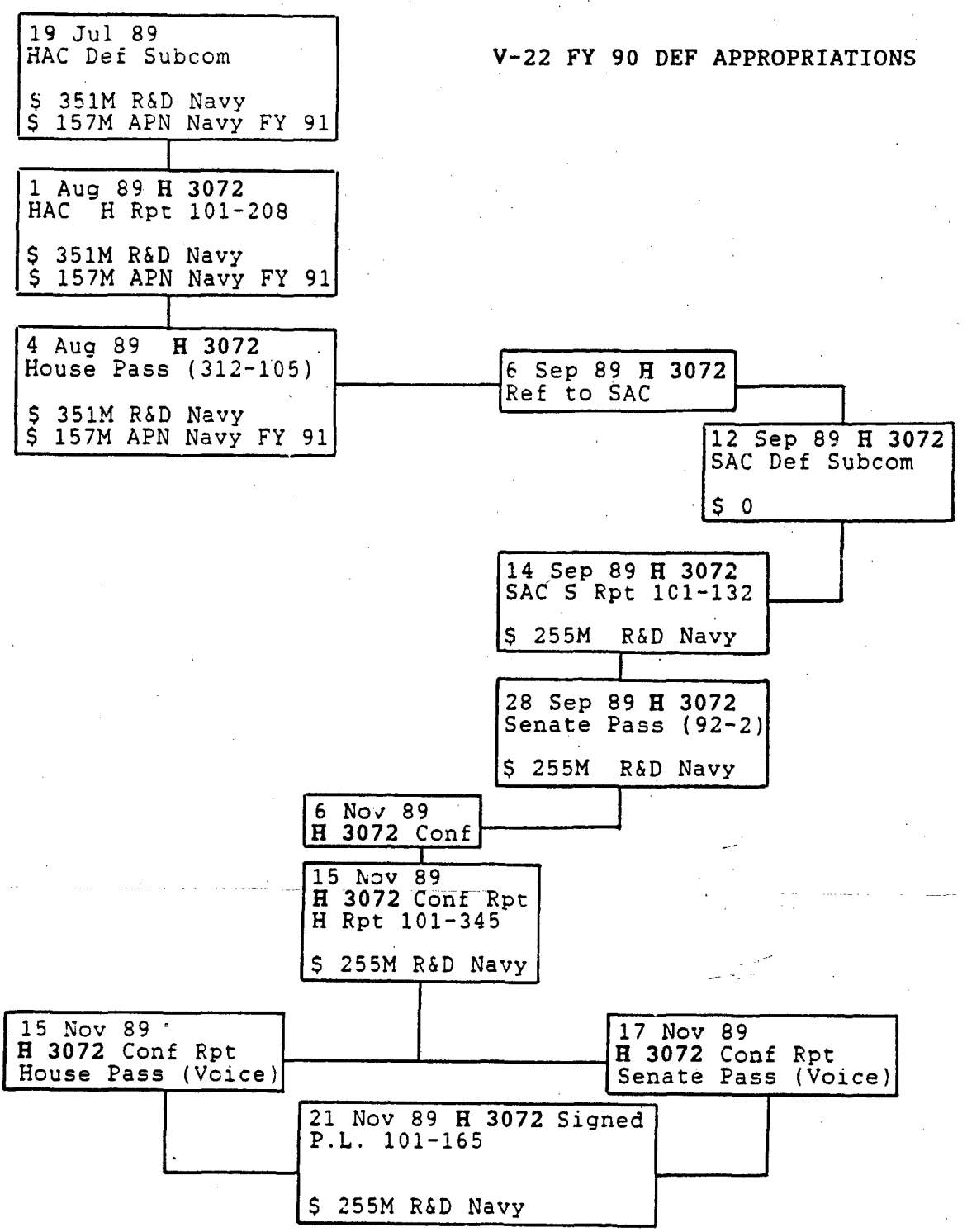
V-22 FY 90 DEF APPROPRIATIONS



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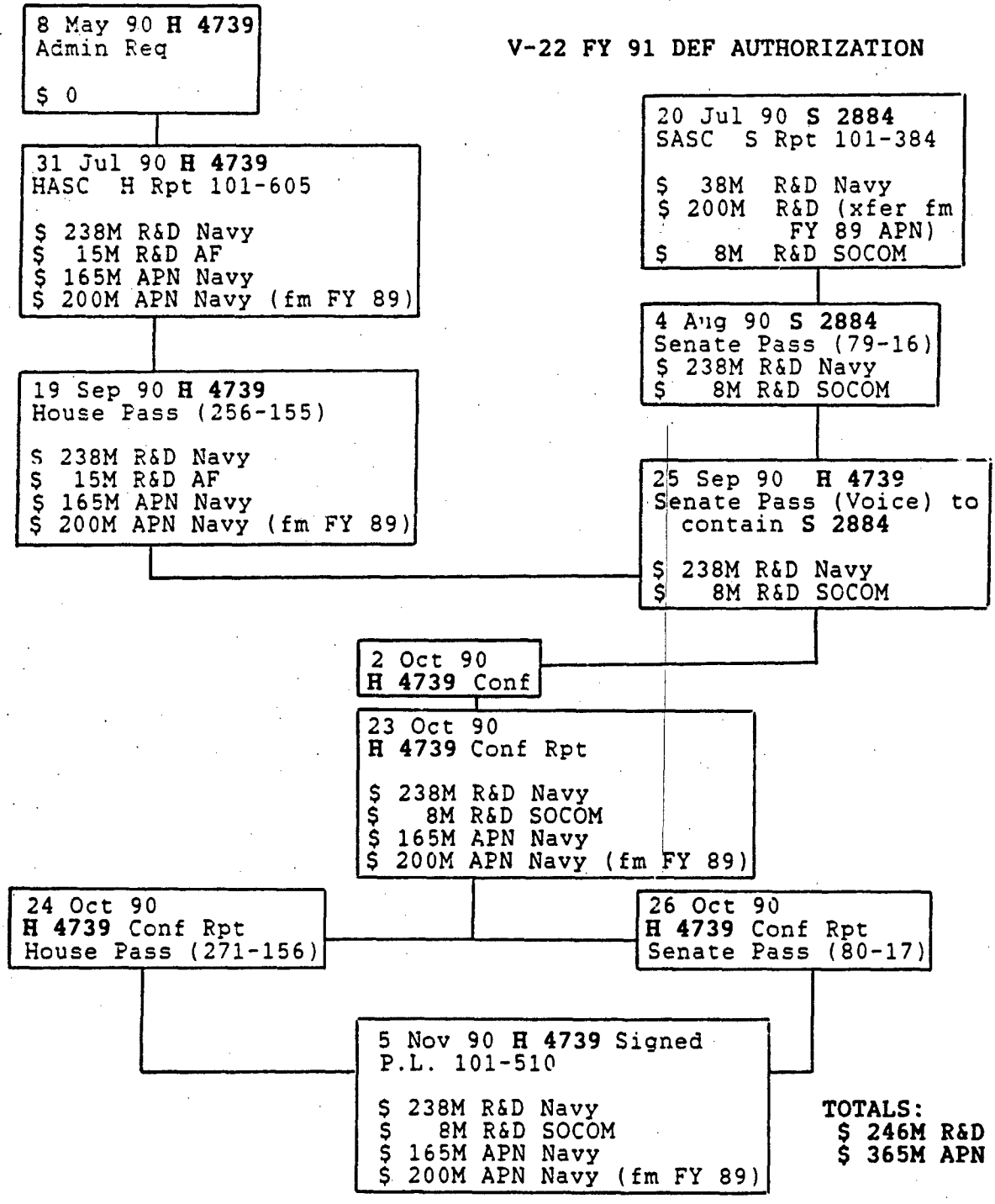
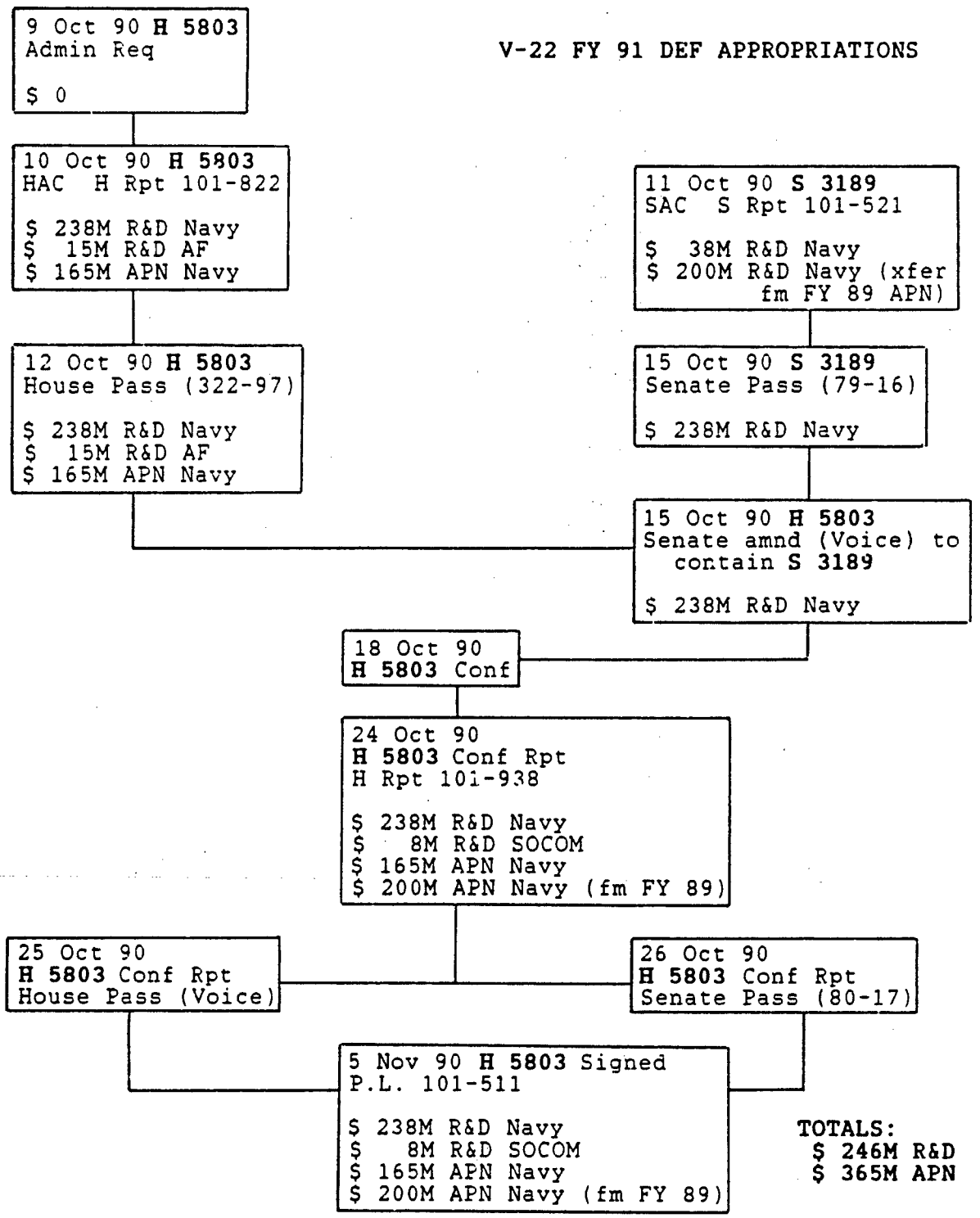


TOTALS:
$ 246M R&D
$ 365M APN

V-22 FY 91 DEF APPROPRIATIONS



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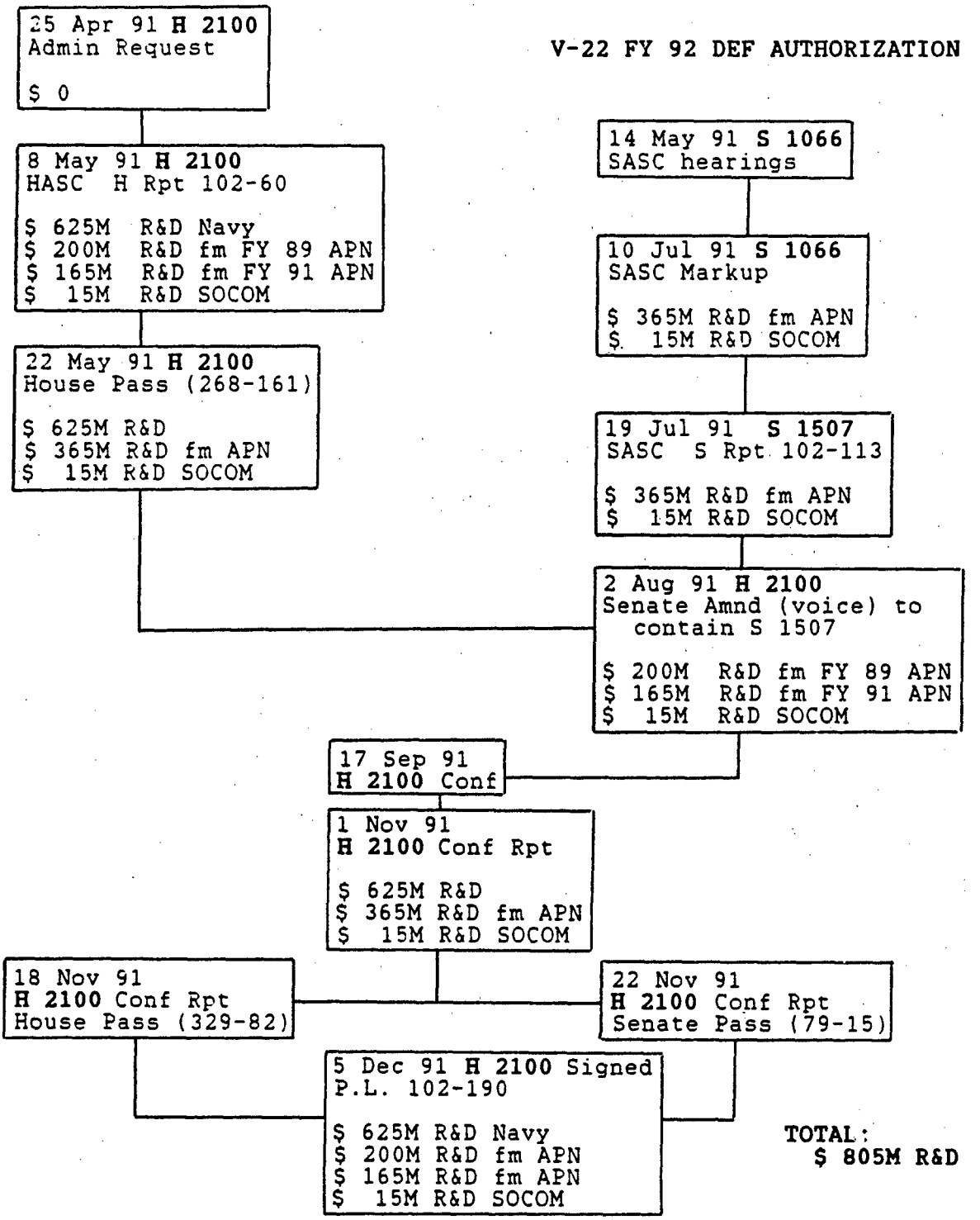
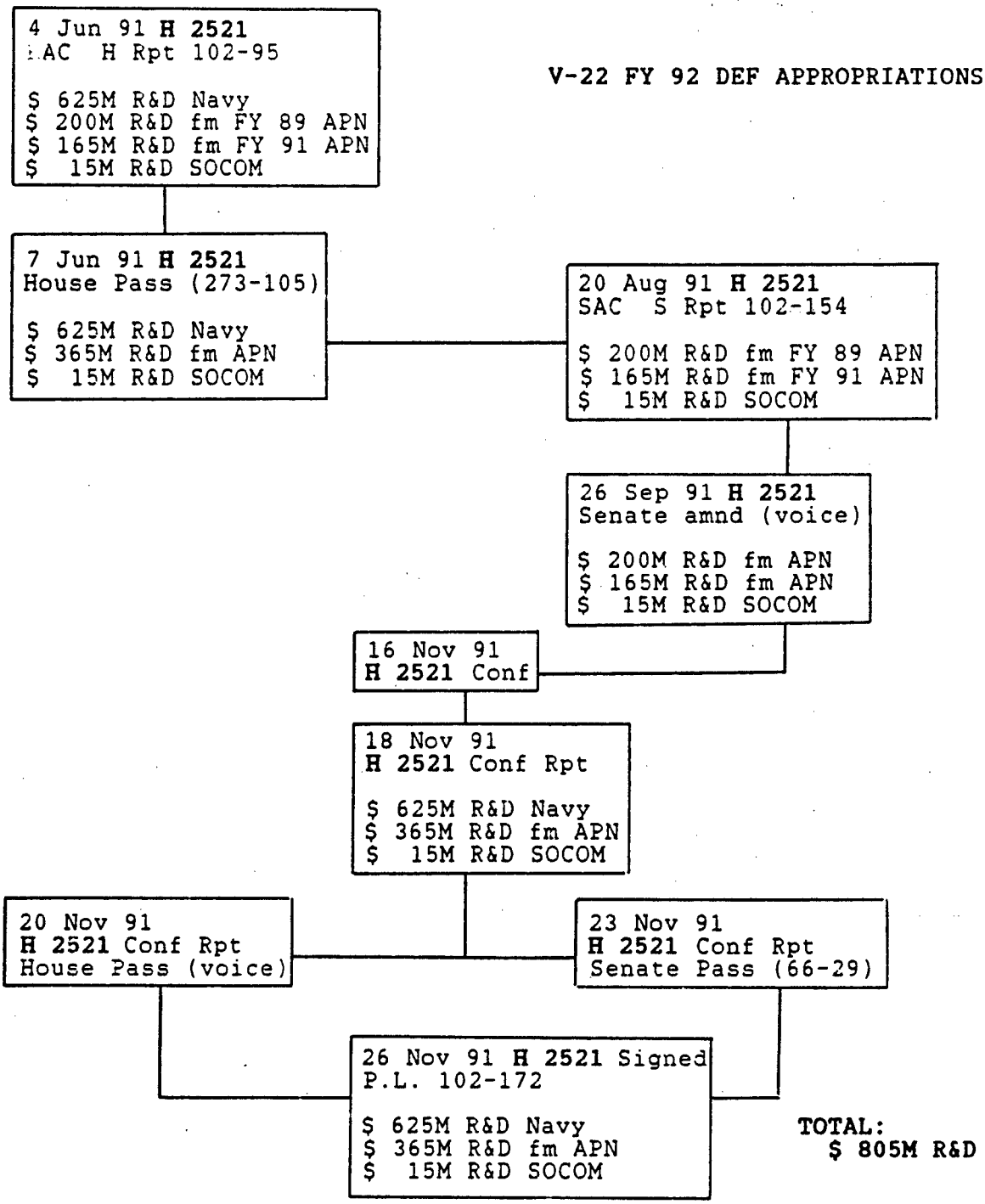


TOTAL:
$ 805M R&D

V-22 FY 92 DEF APPROPRIATIONS



TOTAL:
$ 805M R&D

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